

Sky Islands: Biodiversity in a Changing Climate

BIOL XXXX, 3 Credit Hours, Winter 2026

Jan 1 – Jan 10, Domestic Travel Study

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WorldStrides Assistant: TBD

Course Description

This course offers an immersive field experience in the Sky Islands of southern Arizona, a hotspot of ecological diversity where the Sonoran desert meets the mountains. Students will explore how elevation shapes species distributions and ecosystem dynamics through guided hikes and fieldwork, biodiversity surveys, hands-on ecological observations, analysis of citizen science data, and group discussions. The course introduces key concepts in biogeography, evolutionary ecology, community ecology, and conservation challenges in the context of climate change. With a focus on experiential learning, students will gain an understanding of the major processes governing elevational and latitudinal biodiversity gradients and practical skills in field ecology while examining the impacts of climate change and human activity on these unique ecosystems. Students will also learn about some of the human history and human ecology of the region, from the lives and culture of the Tohono O'odham Nation to colonization and settlement by Europeans.

Flying into and out of the city of Tucson, Arizona, we will travel to the Chiricahua Mountains two hours southeast. Within a short drive up or down the Chiricahua Mountains, which reach nearly 9,800 feet in elevation, five life-zones can be encountered: Lower Sonoran, Upper Sonoran, Transition, Canadian, and Hudsonian.

Biogeographically, the Chiricahua Mountains are located at a crossroads between distinct desert and mountain biotas. At lower elevations, species are influenced by both the Sonoran Desert to the west and the Chihuahuan Desert to the south and east. At higher elevations, there is a mixing of plants and animals from the Rocky Mountains to the north and the Sierra Madre Occidental Mountains of Mexico.

The Sky Islands course will meet daily for the travel period following the planned schedule below. This schedule is subject to change based on weather conditions, travel delays, or other emergent circumstances. Course activities will consist of lectures, hikes and biodiversity surveys at multiple elevations and ecosystems, group discussions of primary literature, and analysis of citizen science data. Students will complete a final reflection connecting what they learned in the Sky Islands back to our home in the Green Mountains of Vermont.

Course Learning Goals and Objectives

After completing this course, students will:

- Understand the basics of island biogeography theory
- Be able to describe patterns and processes of biodiversity variation across elevational gradients
- Understand how and why elevational gradients can mimic latitudinal gradients
- Understand how evolutionary processes (speciation and adaptation) contribute to biodiversity variation along elevational and latitudinal gradients
- Understand the usefulness of citizen science data, and its pros and cons (eg. iNaturalist)
- Be able to conduct basic data analysis of citizen science data in R
- Be able to compare the biomes and ecosystems of the American Southwest and the American Northeast
- Understand how native peoples lived in the Sonoran Desert before and after European colonization
- Make predictions about the impact of climate change on ecosystems and species

Pre-requisites

BCOR 2100 or NR 2030

Required Course Materials:

Laptop (not tablet) with wifi and R and R Studio installed

iNaturalist and Merlin phone apps (free)

See packing list

Learning Modalities:

Experiential learning makes up most of the course activities. We will be spending our days hiking, conducting biodiversity surveys, and going to museums, with evenings typically reserved for group discussions and assignments. Electronic course materials (readings and assignments) will be provided in Brightspace, and Perusall will be used to annotate primary literature for group discussions. Students should be prepared for long days outside.

For Brightspace information, students can access the following UVM Knowledge Base article:

<https://www.uvm.edu/it/kb/article/brightspace-for-students/>

Attendance Policy and Classroom Environment Expectations:

Attendance: This is a 3 credit course taking place over the course of 8 full days. On-time attendance at all course events (hikes, discussions, analysis meetings, etc.) is required. In the event of an injury or illness, attendance requirements will be modified on a case-by-case basis.

Classroom expectations:

You will be assigned readings and some synthesis activities (eg. data analysis, written reflections, group discussions). Because of the experiential nature of the class, you are expected to complete these on schedule to support your own learning experience and that of your fellow students.

We will largely be travelling as a group, so for logistical reasons, safety, and out of respect for your fellow students, you are expected to be on time for all scheduled meetings and events.

In this class, we will work together to develop a learning community that is inclusive and respectful. As a learning community we will seek to encourage and appreciate expressions of different ideas, opinions, and beliefs in the spirit of Our Common Ground. Meaningful and constructive dialogue is a major component of this class. This requires mutual respect and willingness to listen. [See Undergraduate Catalogue - Classroom Code of Conduct.](#)

Group travel:

Because this is a group travel course, we will be in close quarters with each other for the duration. This includes sharing a bus, sharing rooms, and sharing food. Please be considerate of your fellow students at all times. We will also be preparing some of our own meals, including breakfasts, bagged lunches and some dinners while we are in the Chiricahuas. You are encouraged to plan grocery purchases with sharing and communal cooking in mind.

Grading Criteria/Policies

Because of the short duration of the course, late assignments are not accepted without extenuating circumstances (eg. injury, illness) or *advance* approval from the instructor.

Grading scheme: TBD

Academic Integrity and AI:

You each bring different backgrounds and expertise to this course, which you are encouraged to draw on to contribute to a collaborative learning process. Therefore, *unless otherwise*

specified, all assignments are expected to be completed collaboratively. While each student in a group may contribute differently to an assignment, all group members will be expected to understand and be able to explain all parts of the final product.

It is tempting to use generative AI (ChatGPT and others) to support our work, from brainstorming to writing to editing. However the primary goal of the assignments in this course is not the final product, but the learning growth and cognitive synthesis you develop during the process of completing these assignments. This is not something we can farm out to generative AI. Therefore, this course assumes that all work submitted by students will be generated by the students themselves, working individually or in groups according to the requirements of the assignment. Students should not have another entity do the idea generation, writing, editing, or any other part of an assignment for them. This includes refraining from using artificial intelligence tools such as ChatGPT. Use of these tools will be considered an Academic Integrity violation.

Assessments (Graded Work):

Assessments will consist of group assignments, reflections, group discussions, and quizzes. There will also be a final paper and reflection due after the conclusion of the course. Specifics TBD.

Course Schedule

Date	Events	Lodging	Assignment
Jan 1	Arrive Tucson International Airport Introductions Syllabus overview Introduction to iNaturalist and Merlin	Comfort Suites at Sabino Canyon	Plan grocery shopping Read syllabus
Jan 2*	Grocery store trip Travel from Tucson to Chiricahua Mountains Stop at Chiricahua National Monument Lecture on island biogeography and latitudinal and elevational gradients	Cave Creek Ranch	TBD

Jan 3*	Visit to Chiricahua Desert Museum Desert site hike and biodiversity survey Night hike	Cave Creek Ranch	TBD
Jan 4*	High elevation hike and biodiversity survey Lecture TBD	Cave Creek Ranch	TBD
Jan 5*	Mid elevation hike and biodiversity survey Lecture TBD	Cave Creek Ranch	TBD
Jan 6*	Low elevation hike and biodiversity survey Lecture TBD	Cave Creek Ranch	TBD
Jan 7*	Travel to Bisbee, AZ Copper Creek Mine Tour Lecture on geology, biogeochemistry, and mining	Carrick Hotel, Bisbee	TBD
Jan 8*	Visit Sandhill Crane overwintering grounds at Whitewater Draw Travel to Tucson, AZ Visit to Mission Garden Agricultural Museum Tour of University of Arizona Natural History Collection	Comfort Suites at Sabino Canyon	TBD
Jan 9*	Visit Tohono O'Odham Cultural Center Hike and sunset at Gates Pass Wrap up and reflections	Comfort Suites at Sabino Canyon	TBD
Jan 10	Depart Tucson International Airport	NA	Final assignment and reflection, due date TBD

* Exact locations and activities subject to change

Additional Policies

Lived Name and Pronoun Information

The UVM Directory includes fields for indicating your lived name and your pronouns. Lived names (preferred names, names in use) are names that an individual wants to be known by in the University community. Entering your pronouns is strongly encouraged to help create a more inclusive and respectful campus community. To update your information, login to the UVM Directory. A preview box will allow you to see how this information will appear in other systems used on campus such as Microsoft Teams and Blackboard.

More information about how to make changes to your lived name and pronouns is available in the [Knowledge Base](#).

Research and Citation Help

For help selecting research topics, finding information, citing sources, and more, ask a librarian. The UVM Libraries are eager to help. You may ask questions by phone, e-mail, chat, or text, or make an appointment for an individual consultation with a librarian.

Howe Library: <https://library.uvm.edu/askhowe>

Dana Medical Library: <https://dana.uvm.edu/help/ask>

Silver Special Collections Library: <https://specialcollections.uvm.edu/help/ask>

Course Evaluation:

All students are asked to complete a course evaluation at the end of the course. These evaluations are anonymous and confidential, and your honest, constructive feedback is greatly valued. The insights you provide—both what worked well and what could be improved—will be used to strengthen future versions of the course. We appreciate thoughtful and respectful comments that help us enhance the learning experience for everyone.

General statement regarding potential changes during the semester:

<http://catalogue.uvm.edu/>

The University of Vermont reserves the right to make changes in the course offerings, mode of delivery, degree requirements, charges, regulations, and procedures contained herein as educational, financial, and health, safety, and welfare considerations require, or as necessary to be compliant with governmental, accreditation, or public health directives.

Intellectual Property Statement/Prohibition on Sharing Academic Materials:

Students are prohibited from publicly sharing or selling academic materials that they did not author (for example: class syllabus, outlines or class presentations authored by the professor, practice questions, text from the textbook or other copyrighted class materials, etc.); and students are prohibited from sharing assessments (for example homework or a take-home examination). Violations will be handled under UVM's Intellectual Property policy and [Code of Academic Integrity](#).

Student Learning Accommodations:

In keeping with University policy, any student with a documented disability interested in utilizing ADA accommodations should contact Student Accessibility Services (SAS), the office of Disability Services on campus for students. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly recommended to discuss with their faculty the accommodations they plan to use in each course. Faculty who receive Letters of Accommodation with Disability Related Flexible accommodations that go beyond the default accommodations will need to fill out the [Disability Related Flexibility Agreement](#). Any questions from faculty or students on the agreement should be directed to the SAS specialist who is indicated on the letter.

Contact SAS:

A170 Living/Learning Center;

802-656-7753

access@uvm.edu

www.uvm.edu/access

Important UVM Policies

(You may provide these in a separate document posted in Brightspace if you wish)

Academic Integrity:

The [Academic Integrity policy](#) addresses plagiarism, fabrication, collusion, and cheating.

Code of Student Conduct:

[UVM's Code of Student Conduct](#) outlines conduct expectations as well as students' rights and responsibilities.

FERPA Rights Disclosure:

The purpose of UVM's [FERPA Rights Disclosure](#) is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974.

Final Exam Policy:

The University [final exam policy](#) outlines expectations during final exams and explains timing and process of examination period.

Grade Appeals:

If you would like to contest a grade, please follow the procedures [outlined in this policy](#).

Grading:

[This link](#) offers information on grading and GPA calculation.

Religious Holidays:

Religions may be practiced in many different ways, and can impact participation in classes variably. Students have the right to practice the religion of their choice. Each semester students should submit in writing to their instructors as early as possible and at least one week prior to their documented religious holiday the date(s) of the conflict or absence. Faculty must permit students who miss work or exams for the purpose of religious observance to make up this work. The complete policy is [here](#).

Promoting Health & Safety:

The University of Vermont's number one priority is to support a healthy and safe community:

[Center for Health and Wellbeing](#) offers a variety of resources, including resources to support physical and mental health and food security, including Counseling and Psychiatry Services (CAPS). The CAPS direct phone line is (802) 656-3340.

C.A.R.E. If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by [visiting the C.A.R.E. Team website](#).